IN THE SPECIFICATION

Please replace the section beginning at page 41, line 23 and ending at page 44, line 12, with the following.

--In the fourth embodiment, a substrate ~~201~~ 202 is employed that is made, for example, of glass, ceramics, plastic or metal, as shown in FIG. 9A. FIG. 9A is a schematic perspective view of a substrate before a photosensitive material layer is formed. So long as the substrate ~~201~~ 202 functions as a part of a wall member for a flow path, and as a support member for a flow path structure made of a photosensitive material layer that will be described later, the shape and the material of the substrate ~~201~~ 202 are not especially limited. A desired number of liquid discharge energy generation devices (liquid discharge energy generating elements) ~~202~~ 201, such as electro-thermal conversion devices or piezoelectric devices, are arranged on the substrate ~~201~~ 202 (two in FIG. 9A). Discharge energy for discharging small liquid droplets is applied to ink by the liquid discharge energy generation devices ~~202~~ 201, and recording is performed. When electro-thermal conversion devices are employed as the liquid discharge energy generation devices ~~202~~ 201, these devices heat the recording liquid nearby and generate discharge energy. Or, when piezoelectric devices are employed, discharge energy is generated by mechanical vibration of these devices.

It should be noted that control signal input electrodes (not shown) for driving these devices are connected to the discharge energy generation devices ~~202~~ 201. Further, generally, various function layers, such as a protective layer, are formed in order to extend the life expectancy of these discharge energy generation devices ~~202~~ 201, and also, naturally, in this invention, these function layers can be provided. Most commonly, silicon is employed for the

substrate ~~201~~ 202. That is, since a driver and a logic circuit that controls discharge energy generation devices are produced by a common semiconductor manufacturing method, it is appropriate for silicon to be employed for the substrate. Further, a YAG laser or a sandblasting technique can be employed for forming ink supply through holes in the silicon substrate. However, it is preferable that through holes not be formed during the resist coating process. For this method, the silicon anisotropic etching technique that uses an alkaline solution can be employed. In this case, a mask pattern made, for example, of alkaline-resisting silicon nitride must only be formed on the reverse face of the substrate, and a membrane film of the same material must be formed on the obverse face as an etching stopper.

Sequentially, as shown in FIG. 9B, a PMIPK positive type resist layer 203 is coated on the substrate ~~201~~ 202 on which the liquid discharge energy generation devices ~~202~~ 201 are mounted. As PMIPK, the resin density of ODUR-1010 marketed by Tokyo Ohka Kogyo Co., Ltd., is adjusted to 20 WT%. The prebaking process is performed using a hot plate at 120°C for three minutes, and thereafter, the thermal process is performed in an oven, under a nitrogen atmosphere, at 150°C for 30 minutes. The thickness of the deposited film is 15 μm.

Following this, as shown in FIG. 9C, a photodegradable positive type resist layer ~~204~~ 221 of P(MMA-MAA) is applied to the positive type resist layer 203. The following positive resist is employed for the photodegradable positive type resist of P(MMA-MAA):

radical polymer (P(MMA-MAA)) of methyl methacrylate and methacrylic acid, weight-average molecular weight (Mw: polystyrene conversion) = 170000, degree of dispersion (Mw/Mn) = 2.3--

Please replace the section beginning at page 44, line 24 and ending at page 46, line 17, with the following.

--Next, as shown in FIG. 9D, exposure is performed for the photodegradable positive resist layer ~~204~~ 221 of P(MMA-MAA). Mask aligner UX-3000 SC, by Ushio Inc., is employed as an exposure apparatus, and light having an exposure wavelength of 230 to 260 nm is selectively employed for irradiation by using a cut filter. Then, as shown in FIG. 9E, the photodegradable positive type resist layer ~~204~~ 221 composed of P(MMA-MAA) is developed by using a development liquid having the following composition, and a desired pattern is formed.

Development liquid:

diethylene glycol monobutyl ether: 60 vol%

ethanol amine: 5 vol%

morpholine: 20 vol%

ion exchange water: 15 vol%

Next, as shown in FIG. 9F, patterning (the exposing and developing) of the lower positive resist layer 203 of PMIPK is performed. The same exposure apparatus is employed, and light having an exposure wavelength of 270 to 330 nm is employed to selectively perform irradiation using a cut filter. The development is made by methyl isobutyl ketone. Then, as shown in FIG. 9G, resin composite 1 used in the first embodiment is employed to form a discharge port formation layer ~~207~~ 204, so that the lower positive type resist layer 203 and the upper positive type resist layer ~~204~~ 221 that have been patterned are covered.

For forming this layer ~~207~~ 204, resin composite 1 is dissolved in a solvent mixture of methyl isobutyl ketone and xylene at a density of 60 mass%, and the resultant liquid is applied to

the substrate using spin coating. The prebaking is made by using a hot plate at 90˚C for three minutes. Mask aligner MPA-600 FA, by Canon Inc., is employed as an exposure apparatus, and an exposure of $3J/cm^2$ is performed. The structure is thereafter immersed in xylene for sixty seconds for developing, and is then baked at 100˚C for one hour in order to increase the adhesion of the discharge port formation material. Thereafter, the pattern exposure and development of an ink discharge port 209 is performed for the discharge port formation material ~~207~~ 204. An arbitrary exposure apparatus can be employed for the pattern exposure, and although not shown, a mask that prevents light from being projected onto a portion that is to be an ink discharge port is employed during the exposure process.--

Please replace the section beginning at page 47, line 9 and ending at page 48, line 5, with the following.

--Next, as shown in FIG. 9H, by using a low pressure mercury lamp, ionizing radiation 208 in the wavelength area 300 nm or lower is projected onto the entire substrate through the discharge port formation material ~~207~~ 204, and the upper positive type resist of PMIPK and the lower positive type resist of P(MMA-MAA) are decomposed. The amount of ionizing radiation is $50J/cm^2$.

Thereafter, the silicon substrate ~~201~~ 202 is immersed in methyl lactate to collectively remove the mold resist, as shown in the vertical cross-sectional view in FIG. 9I. At this time, the silicon substrate ~~201~~ 202 is placed in a megasonic tub of 200 MHz in order to reduce the elution time. Through this process, an ink flow path 211 including a discharge port is formed, and thus, an ink discharge element is obtained whereby ink from each ink flow path 211 is introduced to

each discharge chamber through an ink supply hole 210, and is discharged from a discharge port 209 by a heater. The size of the obtained discharge port 209 is ϕ6 μm, and the OH height is 25 μm. Since the flow path height is 15 μm, and the thickness of the P(MMA-MAA) film formed on the heater is 5 μm, the OP thickness is 5 μm.--